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China:	25X′
<b>Provincial Grain Production</b>	

A Reference Aid

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EA 82-10031 March 1982

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China:	 25 <b>X</b> 1
Provincial Grain Production	20/(1

### A Reference Aid

Information available as of 1 February 1982 has been used in the preparation of this report.

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This paper was prepared by Office of East Asian Analysis.	25 <b>X</b> 1
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This paper has been coordinated with the Office of Global Issues.	25X1

Confidential EA 82-10031 March 1982

Approved Fo	or Release 2007/02/12 : CIA-RDP83B00227R00010007	70005-7 Confidential
	China: Provincial Grain Production	25X1
Introduction	China's increased reporting on provincial grain produce permits the reconstruction of a relatively complete permits the reconstruction of a relatively complete permits the reconstruction of a relatively complete permits of 1965 and for the 1970-80 period (see earlier years—1949 and 1957—also are included becaused as comparison bases by the Chinese and are significant turning points in production trends (see appendix A), presenting estimates of total grain output by province discussions of historical trends in production of specific growth and annual variations in provincial and region deficit regions, and the movement of grain between a presented provide a base for further research on Chimay be useful in measuring the impact of various infertilizer, irrigation, pesticides, improved seeds, and in	rovincial series on table 1). Data for two cause they are often nificant historical In addition to e, this paper includes ic grain crops, rates of tal output, surplus and regions. The data ma's agriculture and puts including

production in China's regions and provinces.

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## China: Provincial Grain Production

	1965	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Anhui	9.626	12.600	13.457	13.572	15.100	15.552	15.750	17.134	14.722	14.825	16.090	14.539
Beijing	1.001	1.418	1.500	NA	1.543	1.697	1.853	1.748	1.512	1.860	1.730	1.860
Fujian	4.292	NA	5.401	6.215	6.600	7.062	7.200	6.038	6.539	7.284	7.620	8.019
Gansu	3.690	3.864	3.864	4.250	3.871	5.032	5.535	NA	4.757	4.900	4.620	4.930
Guangdong	13.061	14.921	NA	NA	14.486	15.935	16.153	NA	NA	16.250	17.380	18.080
Guangxi	6.335	7.858	8.899	9.433	NA	10.008	10.508	11.139	10.374	10.850	11.730	11.910
Guizhou	5.775	6.600	6.944	NA	7.000	5.940	NA	6.699	7.644	7.644	6.230	6.480
Hebei	10.435	13.272	13.300	12.100	14.259	15.685	16.226	14.800	NA	16.850	17.790	15.220
Heilongjiang	9.113	12.166	NA	9.399	11.323	13.271	14.399	10.738	11.900	15.000	14.630	14.625
Henan	11.664	15.000	16.000	16.500	18.721	18.079	18.663	21.818	21.818	21.091	21.345	21.480
Hubei	12.773	12.750	13.100	13.045	14.045	15.450	15.988	16.988	16.183	17.250	18.495	15.360
Hunan	10.980	14.668	15.549	15.222	16.470	16.960	18.062	18.100	18.118	20.800	22.180	21.240
Jiangsu	13.400	15.500	17.650	17.470	19.500	19.073	19.364	21.250	18.161	22.738	25.140	23.570
Jiangxi	NA	NA	NA	NA	NA	9.842	10.827	9.461	10.880	11.250	12.970	12.400
Jilin	5.733	7.629	7.629	NA	NA	8.732	8.485	7.629	8.300	9.150	9.035	8.600
Liaoning	6.377	6.454	6.760	6.257	8.447	9.604	10.454	NA	10.350	10.700	11.940	12.215
Nei Mongol	3.820	NA	NA	3.401	4.252	4.770	4.469	5.050	NA	4.950	5.095	3.970
Ningxia	NA	0.985	NA	NA	0.763	1.182	NA	0.806	0.999	1.180	1.061	1.204
Qinghai	0.713	0.618	0.724	0.885	0.856	0.885	0.982	0.997	0.818	0.857	0.820	0.960
Shaanxi	4.544	6.054	6.659	6.400	6.707	7.567	8.324	NA	5.707	8.000	9.090	7.570
Shandong	12.209	13.714	15.000	NA	17.581	17.355	20.000	22.500	21.000	22.880	24.720	23.840
Shanghai	1.530	NA	2.100	2.154	2.283	2.310	NA	2.470	2.070	2.520	2.590	1.869
Shanxi	NA	4.996	5.800	5.014	5.816	6.903	7.593	NA	NA	7.065	8.005	6.855
Sichuan	20.076	23.328	24.028	23.250	24.645	NA	25.250	24.850	27.500	30.600	32.010	32.640
Tianjin	NA	NA	0.304	NA	NA	NA	NA	NA	NA	1.186	1.385	1.380
Xinjiang	3.012	NA	3.184	3.012	3.222	3.098	3.407	3.400	3.217	3.700	3.940	3.890
Xizang	0.291	0.309	0.355	0.325	0.375	0.433	0.444	0.478	0.513	0.527	0.424	0.505
Yunnan	5.684	6.821	NA	7.105	7.977	7.730	7.730	NA	7.624	8.615	7.930	8.655
Zhejiang	NA	11.352	NA	13.215	12.900	12.040	10.215	10.839	12.465	14.215	16.120	14.350

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low production level. The other major change was the 1979 restoration of regions ceded by Nei Mongol to the northeastern provinces of Heilongjiang, Liaoning, and Jilin, and to Ningxia and Gansu in 1969. Although the territory involved was immense, the low production of grain in the region created only minor inconsistencies. For consistency and comparisons with base year data, the Chinese have seemingly adjusted their claims to coincide with boundaries in existence during the 1970s.

#### **National Grain Output**

Since 1949, China's grain output has increased at an average annual rate of about 3.5 percent, slightly above population growth (see table 3). During the 1950s production rose rapidly as the country recovered from the effects of the Sino-Japanese war and the civil war. The stability provided by the central government during the First Five Year Plan (1952-57) disappeared with the drive to create a commune system of agriculture and launching of the Great Leap Forward (1958-60). Poor weather and mismanagement caused a drastic decline in output in 1959. Production began to recover with the implementation of "agriculture-first policies" in 1961, and by 1965 output reached the levels achieved in 1957 and 1958. Since the early 1960s, the use of modern inputs, notably chemical fertilizers, has expanded rapidly and has led to relatively steady growth in output

Increased grain production has occurred by planting more high-yield strains, expanding the practice of multiple cropping, and by increasing the use of fertilizers, pesticides, and irrigation. Between 1957 and 1978, output of high-yielding potatoes and corn rose at a considerably higher rate than the 60-percent increase in total grain production (see table 4). In the same period, China's production of lower yielding crops—millet, soybeans, and sorghum—increased only slightly or fell. Production of wheat, which is suitable for multiple cropping, increased by more than twice the national rate of growth for grain production. Rice output kept pace with increases in total production

Table 3	Million Metric Tons
China: National Grain Production	

	Total a
1949	110.6
1950	129.2
1951	140.5
1952	160.2
1953	163.1
1954	165.7
1955	179.8
1956	188.4
1957	190.7
1958	195.5
1959	166.2
1960	140.3
1961	144.2
1962	156.4
1963	166.2
1964	183.3
1965	194.5
1966	214.0
1967	217.8
1968	209.1
1969	211.0
1970	240.0
1971	250.1
1972	240.5
1973	264.9
1974	275.3
1975	284.5
1976	286.3
1977	282.7
1978	304.8
1979	332.1
1980	318.2

<sup>&</sup>lt;sup>a</sup> Includes potatoes converted on a grain equivalent basis of 5 to 1. It is assumed that the Chinese converted potatoes at a 4-to-1 ratio through 1964. Reported output figures through 1964 have been multiplied by 0.97754, the ratio of output of grain including potatoes at a 5-to-1 basis to grain including potatoes on a 4-to-1 basis for 1957.

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Table 4

China: National Grain Production, by Type

	1957	1965	1976	1977	1978	1979	1980
Grain				<u>.</u>			
Million metric tons	191	195	286	283	305	332	318
Percent	100	100	100	100	100	100	100
Rice							
Million metric tons	87	88	126	129	137	144	139
Percent	45.5	45.1	44.1	45.6	44.9	43.4	43.7
Wheat							
Million metric tons	24	25	50	40	54	63	54
Percent	12.6	12.8	17.5	14.1	17.7	19.0	17.0
Corn						-	
Million metric tons	21	24	48	49	56	60	NA
Percent	11.0	12.3	16.8	17.3	18.4	18.1	NA
Sorghum							
Million metric tons	8	7	9	8	8	8	NA
Percent	4.2	3.6	3.1	2.8	2.6	2.4	NA
Millet							
Million metric tons	9	6	6	6	7	6	NA
Percent	4.7	3.1	2.1	2.1	2.3	1.8	NA
Tubers							
Million metric tons	18	20	27	30	32	28	29
Percent	9.4	10.3	9.4	10.6	10.5	8.4	9.1
Soybeans							
Million metric tons	10	6	7	7	8	7	8
Percent	5.2	3.1	2.4	2.5	2.6	2.1	2.5
Miscellaneous grains							
Million metric tons	14	19	13	14	3	16	NA
Percent	7.4	9.7	4.6	5.0	1.0	4.8	NA
		- · · · · ·					25X

Despite Beijing's emphasis on grain production between 1960 and 1978, China's grain-producing areas fell both in absolute terms (by 13 million hectares) and as a percentage of the total sown area. In contrast, the industrial crop area increased as a percentage of the sown area (see table 5). The readjustment process begun in 1978 led to a further 6.7 million hectare

reduction in the grain area by 1981. Most of the decline was the result of planting industrial crops on land formerly sown to grain.

#### **Trends in Provincial Production**

The increased use of modern inputs and the expansion of irrigated area have led to variations in regional patterns of development. Because the high-yield provinces of central China received priority delivery of

#### Table 5

Million Hectares

#### China: Agricultural Land Use

	Cultivated Area	Sown Ar	rea	
		Total a	Grain	Industrial
1952	108.0	140.9	123.7	12.4
1957	111.9	157.3	133.7	14.5
1978	99.4	150.1	120.7	14.5

<sup>&</sup>lt;sup>a</sup> Total sown area is larger than cultivated area because of multiple cropping.

inputs, grain production in this region exceeded the national growth rate (see figure 1). The North China Plain benefited from investment in tube wells, which permitted more land to be irrigated (see figure 2). Better water conservancy, combined with increased application of fertilizer and improved seed varieties, resulted in rapid increases in output in north China. Other areas showing good progress during the 1970s were Sichuan and Liaoning—which had lagged behind most of the nation during the 1960s—Guangxi, and Jilin

Geographically, the provinces that performed less satisfactorily had little in common. However, most of the slow-growth areas—Shanghai, Guizhou, Zhejiang, and Anhui—also suffered from political instability during the succession period 1973-77. Growth rates in Hebei and Nei Mongol were impeded by the drought-induced disasters of 1980.

A comparison of 1980's grain output with that of 1957 highlights the development of production in the northeastern and northern provinces (see figure 3). North China, the leading grain producing region, had the largest increase in its share of national output. The southwest lagged behind the rest of the country, dropping from second to fourth place as a grain-producing region. The other regions essentially maintained their shares of production. Within the regions,

Jiangsu, Jiangxi, and Shandong increased their shares of national output whereas Anhui, Hubei, and Sichuan fell behind

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North China is the major wheat-producing area, and the provinces of this region account for almost half of national wheat output (see figure 4). This region produces winter wheat in a two-crops-in-three-years rotation. The wheat is usually rotated with a crop of coarse grains, soybeans, or oilseeds. The northwest is the second most important producer of wheat. Heilongjiang is the leading producer of spring wheat. The northern sections of Anhui and Jiangsu Provinces and Sichuan Province also harvest significant quantities of wheat.

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Rice predominates in the provinces south of the major wheat-producing areas. Central China leads the nation with almost one-third of the annual rice crop. South, southwest, and east China each account for a significant portion of the national total. Depending on local conditions and manpower availability, rice is either double cropped or planted in rotation with an overwintering crop. In south China, central China, and Zhejiang (in east China) where double cropping is prevalent, rice accounts on average for more than 80 percent of total grain output. North, northeast, and northwest China together produce about 7 percent of the nation's rice crop.

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Most agricultural regions in the country have basically followed the national pattern of increased plantings of rice, wheat, corn, and potatoes, with a corresponding decrease in the area devoted to millet, sorghum, and soybeans. Deviations from the national trend include:

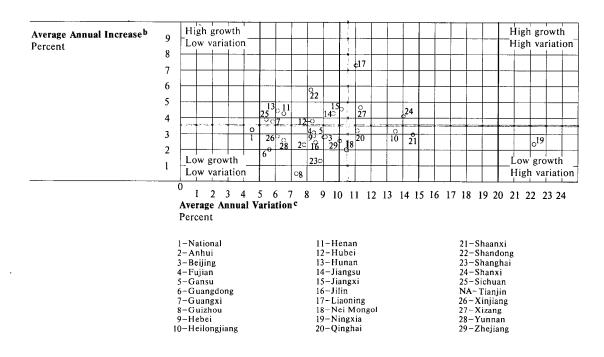
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- Expanded plantings of corn at the expense of all other crops in Shanxi, Shaanxi, and Gansu.
- Expanded plantings of rice and potatoes at the expense of all other crops in the lower and middle Chang Jiang (Yangtze) rice-growing provinces.
- Increased plantings of soybeans in south China.
- Greatly increased plantings of sorghum accompanied by a small reduction in rice plantings in the southwest.

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Figure 1

### China: Annual Variation and Growth of Grain Production, 1969-80<sup>a</sup>



a Several provinces were included with less than 12 years data. If a single year was missing in the series, the gap was filled by interpolation. Guangdong, Jilin, Ningxia, and Shanxi had gaps of two years which were filled with estimates from a least squares regression for the calculation of the growth rate. Tianjin was not included because of limited information. b Calculated by the Pesek method.

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The diverse nature of China's agriculture tends to minimize annual variations in output. A poor harvest in one province is usually offset by above-average yields in other provinces. As a result, the annual variation in national output tends to fluctuate much less widely than output of individual provinces. Moreover, provinces with a high percentage of irrigated land show less fluctuation in output than provinces growing mainly dryland crops (see figure 5). A long

growing season, which permits multiple cropping and increases flexibility in planting schedules, also reduces year-to-year fluctuations. 25X1

#### **Grain Balance**

China is almost self-sufficient in grain. Nevertheless, the coastal urban areas import over 10 million tons of grain annually to meet consumption requirements. As

<sup>&</sup>lt;sup>c</sup>Average percentage change from year to year irrespective of sign.

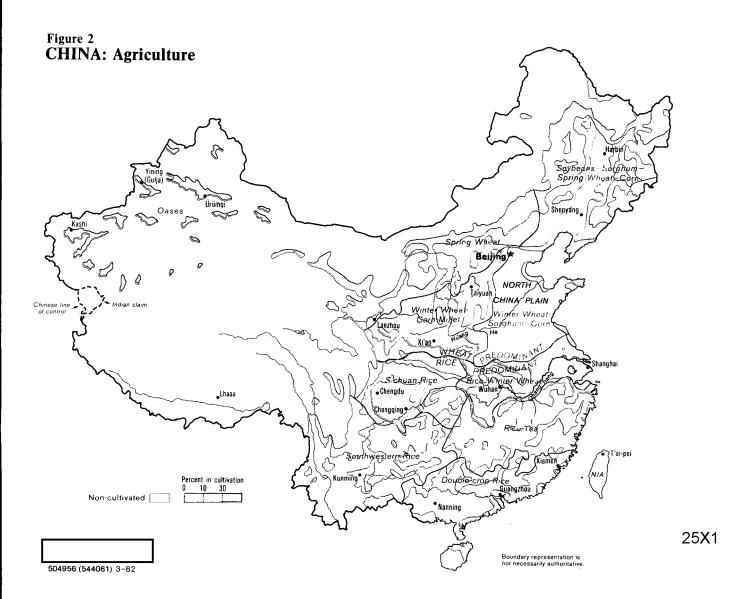


Table 6			Kilograms				
China: Per Capita Grain Production <sup>a</sup>							
	1957	1978	1979				
National	293	303	326				
Central		•					
Hubei	356	377	399				
Hunan	313	403	425				
Jiangxi	376	353	402				
East							
Anhui	369	315	335				
Jiangsu	293	390	427				
Shanghai	100	230	231				
Zhejiang	303	379	425				
North							
Beijing	144	219	199				
Hebei	273	333	349				
Henan	253	298	297				
Shandong	218	320	342				
Shanxi	230	291	327				
Tianjin	NA	164	187				
Northeast							
Heilongjiang b	496	444	462				
Jilin <sup>b</sup>	259	370	414				
Liaoning	224	286	347				
Northwest							
Gansu b	357	262	244				
Nei Mongol b	675	556	275				
Ningxia b	300	322	292				
Qinghai	312	235	220				
Shaanxi	245	288	324				
Xinjiang	361	300	314				
South							
Fujian	303	297	307				
Guangdong	323	291	306				
Guangxi	277	319	338				
Southwest							
Guizhou	317	285	228				
Sichuan	322	315	328				
Xizang	NA	294	232				
Yunnan	338	279	253				

a Yearend population figures.

	a result, although imports comprise only a small					
portion of total grain supplies—3 to 5 percent—the						
account for 15 to 20 percent of the grain consumed i						
	China's cities. The balance, approximately 50 million					
tons, is procured from peasants. The majority of the						
	grain procured by the state is distributed within the					
	producing provinces. 25X1					

Grain involved in interprovincial trade moves from the surplus production areas in the middle and lower Chang Jiang and the northeast to the three municipalities, the industrial province of Liaoning, and the northwest (see figure 6). The major surplus provinces—Zhejiang, Heilongjiang, Jilin, Jiangsu, and the central provinces—have per capita output in excess of 350 kilograms (see table 6). The surplus areas are characterized by high productivity or low population density. Provinces requiring grain from other areas generally have a per capita output of less than 280 kilograms. As an exception, Liaoning is a high per capita grain-producing region but still imports considerable grain. The relatively high percentage of people living in cities in Liaoning probably accounts for this discrepancy. North China—excluding the municipalities—and south China, with per capita production in the 280 to 350 kilogram range, are basically selfsufficient. 25X1

Raising per capita grain output has been a slow process. On the national level per capita output grew by only 3.4 percent between 1957 and 1978. On a provincial level the record was more varied. Almost half of the provinces were unable to keep pace with growth in population. Two regions—the northwest and southwest—fared poorly. Anhui, Guangdong, and Heilongjiang experienced declines of 10 to 15 percent in per capita production. Other parts of the country, notably north and east China (with the exception of Anhui), were able to expand grain production at rates in excess of population growth. Guangxi, Hunan, and Liaoning Provinces also made good gains

b 1979 readjustment of borders led to population shifts between provinces.

## Figure 3

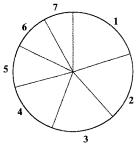
## China: Grain Production, by Region

Percent

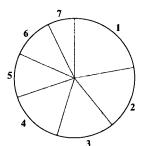
1957

1980

- 1 North-20.2
- 2 Southwest-18.3
- 3 East-17.3
- 4 Central-15.2
- 5 South-11.4
- 6 Northeast-9.8
- 7 Northwest-7.9



- 1 North-22.2
- 2 East-17.1
- 3 Central-15.4
- 4 Southwest-15.2
- 5 South-11.9
- 6 Northeast-11.1
- 7 Northwest-7.1



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Figure 4

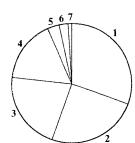
#### China: Rice and Wheat Production, by Region, 1978

Percent

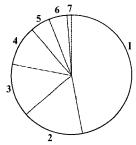
Rice

Wheat

- 1 Central-30.6
- 2 East-24.8
- 3 South-21.5
- 4 Southwest-16.5
- 5 Northeast-3.2
- 6 North-2.47 Northwest-1.0



- 1 North-47.1
- 2 Northwest-16.5
- 3 East-14.6
- 4 Southwest-10.5
- 5 Northeast-5.3
- 6 Central-4.9
- 7 South-1.1



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Figure 6 CHINA: Grain Surplus and Deficit

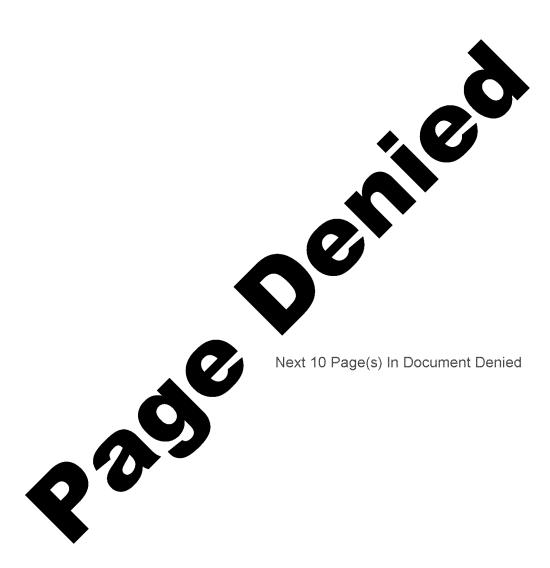


## Appendix A

Provincial Grain Production,	Million Metric Tons
1949 and 1957 a	

	1949	1957
Anhui	4.550	12.370
Beijing	0.417	0.789
Fujian	2.825	4.442
Gansu	2.050	4.589
Guangdong	7.243	12.250
Guangxi	3.720	5.375
Guizhou	2.970	5.356
Hebei	4.695	10.100
Heilongjiang	5.770	7.850
Henan	7.273	12.250
Hubei	5.789	10.966
Hunan	6.400	11.324
Jiangsu	6.559	12.230
Jiangxi	3.875	7.000
Jilin	4.657	5.091
Liaoning	3.977	5.872
Nei Mongol	2.074	2.957
Ningxia	0.250	0.561
Qinghai	0.295	0.640
Shaanxi	3.290	4.440
Shandong	7.900	12.100
Shanghai	0.700	1.050
Shanxi	2.595	3.565
Sichuan	14.947	23.258
Tianjin	0.080	0.208
Xinjiang	1.018	2.034
Xizang	NA	NA
Yunnan	3.865	6.462
Zhejiang	4.300	7.650

<sup>&</sup>lt;sup>a</sup> Production claims for 1949 and 1957 are included because of their importance as base years and for long-term comparison. The data are presented separately because of differing potatoes-to-grain conversion rates. In 1949 and 1957, potatoes were converted into grain at a 4-to-1 rate. In the 1970s a rate of 5 to 1 was used.



## Appendix C

China: 1978 Provincial Grain Output a

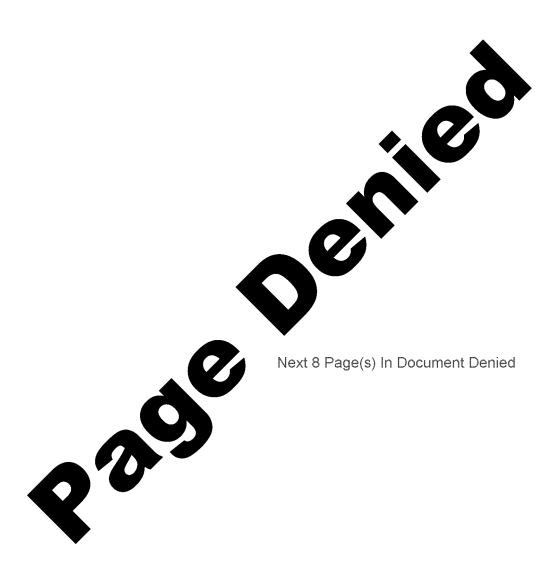
Thousand Metric Tons

	Grain	Rice				Wheat		
		Total	Early	Intermediate	Late	Total	Winter	Spring
National	304,750	136,950	(51,726)	(45,223)	(40,001)	53,750	46,762	6,988
Central							·····	
Hubei	17,250	12,100	5,221	(3,854)	3,025	2,300	2,300	
Hunan	20,800	(18,894)	8,320	(3,294)	7,280	(270)	(270)	
Jiangxi	11,250	(10,908)	6,753	(820)	(3,335)	(90)	(90)	
East								
Anhui	14,825	(8,895)	(4,450)	(2,511)	(1,934)	2,950	2,950	
Jiangsu	22,738	(11,416)	2,974	(5,300)	(3,142)	4,135	4,135	
Shanghai	2,520	(1,777)	785	(97)	(895)	236	236	
Zhejiang	14,215	(11,845)	6,345		(5,500)	551	551	
North		<u> </u>						
Beijing	1,860	(205)		(205)		(684)	(684)	
Hebei	16,850	(600)		(600) b		(6,278)	6,200	(78) b
Henan	21,091	(1,500)	(750)	(375)	(375)	(7,856)	(7,856)	
Shandong	22,880	(650)		(650) b		8,089	8,089	
Shanxi	7,065	(50)		(50) b		(1,937)	(1,862)	(75) b
Tianjin	1,186	(250)		(250) b		(450)	(425)	(25)
Northeast								ii
Heilongjiang	15,000	1,214		1,214		2,523		2,523
Jilin	9,150	1,150		1,150		(240)		(240)
Liaoning	10,700	2,075		2,075		(60)	(30)	(30)
Northwest								
Gansu	4,900	(25)		(25) b		(2,134)	(1,360)	(774)
Nei Mongol	4,950	(40)		(40) b		(1,040)		(1,040)
Ningxia	1,180	(250)		(250) b		(407)		(407)
Qinghai	857					(470)		(470)
Shaanxi	8,000	(750)		(750)		3,052	2,660	(392)
Xinjiang	3,700	(250)		(250) b		1,748	(874)	(874)
South		•					· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
Fujian	7,284	(6,088)	3,102	(886)	2,100	(150)	(150)	
Guangdong	16,250	14,520	5,768	(1,714)	7,038	423	423	
Guangxi	10,850	8,836	5,420	* *************************************	3,416	(36)	(36) b	
Southwest					· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	
Guizhou	7,644	4,586	(200)	(4,236)	(150)	(400)	(400)	
Sichuan	30,600	14,750	1,300	(11,800)	(1,650)	(4,667)	(4,617) b	(50) b
Xizang	527	·-·				(160)	(150)	(10) b
Yunnan	8,615	(3,326)	338 ь	2,827	161 b	(414)	(414)	

<sup>&</sup>lt;sup>a</sup> Figures in parentheses represent estimates based on available information.

considered

b Estimates made to be consistent with national output and estimates of other provincial production. Provincial characteristics, suppose 1 grain production and importance of the crop evaluated, were considered.



## Appendix D

## **Terms and Abbreviations**

Terms		
Catty Jin Three wheats	A measure of weight equivalent to 0.5 kilogram. A measure of weight equivalent to 0.5 kilogram. Wheat, barley, and naked barley.	
		25X1

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